



## HDMI and DVI Interface Buffer LSI for Digital TVs

# BU16014KV

### ● Outline

The BU16014KV integrates a 1 input/1 output buffer for digital TVs. Features include HDMI 1.3a support and built-in DDC(Display Data Channel) line buffer and HPD(Hot Plug Detect).

### ● Features

- 1) Compatible with HDMI 1.3a
- 2) Supports 2.25 Gbps signaling rate for one port
- 3) Compatible with QXGA to 8bit color depth and 1080p resolution to 12bit color depth
- 4) Each port supports HDMI and DVI input
- 5) 5V tolerance in all DDC and HPD inputs (5V tolerant structure)
- 6) Integrated DDC buffer
- 7) Built-in receiver termination
- 8) Equipped with equalizer circuit for long cable compatibility
- 9) High impedance outputs when disabled
- 10) 10kV ESD resistance
- 11) 0.5mm pitch 48-pin package
- 12) RoHS-compliant

### ● Applications

Displays

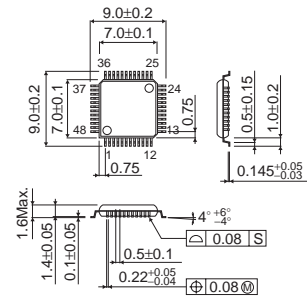
### ● Absolute Maximum Ratings

(Ta=25°C)

Parameter	Min.	Typ.	Max.	Unit	Comment
Power Supply Voltage(Vcc)	-0.3	-	4.0	V	
Power Dissipation	-	-	900	mW	
Storage Temperature Range	-55	-	125	°C	

\* Derated at 9mW/°C above Ta=25°C

### ● Dimensions (Unit: mm)



VQFP48C

- The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- The application circuit examples, information, and various data pertaining to the use of the products presented in this documentation are provided for reference purposes only.
- Please note that ROHM cannot bear any responsibility regarding any problems relating to industrial property rights resulting from their use thereof.

The products listed in this catalog are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).  
Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

Current specifications in effect of 1st. September 2007.

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ROHM CO., LTD.

21, Saiin Mizosaki-cho, Ukyo-ku, Kyoto  
615-8885, Japan  
TEL: +81-75-3112121 FAX: +81-75-315-0172  
URL: <http://www.rohm.com>

Contact us for further information about the products.

**Seoul** TEL: +82-2-8182-700 FAX: +82-2-8182-715  
**Dalian** TEL: +86-411-8230-8549 FAX: +86-411-8230-8537  
**Beijing** TEL: +86-10-8525-2483 FAX: +86-10-8525-2489  
**Shanghai** TEL: +86-21-6279-2727 FAX: +86-21-6247-2066  
**Shenzhen** TEL: +86-755-8307-3008 FAX: +86-755-8307-3003  
**Hong Kong** TEL: +852-2-740-6262 FAX: +852-2-375-8971  
**Taipei** TEL: +886-2-2500-6956 FAX: +886-2-2503-2869  
**Singapore** TEL: +65-6332-2322 FAX: +65-6332-5862  
**Philippines** TEL: +63-2807-6872 FAX: +63-2809-1422  
**Thailand** TEL: +66-2-254-4890 FAX: +66-2-256-6334

**Malaysia** TEL: +60-3-7958-8355 FAX: +60-3-7958-8377  
**Germany** TEL: +49-2154-9210 FAX: +49-2154-921400  
**France** TEL: +33-1-5697-3060 FAX: +33-1-5697-3080  
**United Kingdom** TEL: +44-1-908-306700 FAX: +44-1-908-235788  
**San Diego** TEL: +1-858-625-3630 FAX: +1-858-625-3670  
**Atlanta** TEL: +1-770-754-5972 FAX: +1-770-754-0691  
**Dallas** TEL: +1-469-287-5366 FAX: +1-469-362-7973  
**Kyoto** TEL: +81-75-365-1218 FAX: +81-75-365-1228  
**Yokohama** TEL: +81-45-476-2290 FAX: +81-45-476-2295



● **Recommended Operating Range**

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{CC}$	Supply Voltage	3	3.3	3.6	V
$T_A$	Operating Free-air Temperature	0	–	70	°C
TMDS DIFFERENTIAL PINS (A/B)					
$V_{ID}$	Receiver Peak-to-Peak Differential Input Voltage	150	–	1560	mVp-p
$V_{IC}$	Input Common Mode Voltage	$V_{CC}-0.4$	–	$V_{CC}+0.01$	V
$AV_{CC}$	TMDS Output Termination Voltage	3	3.3	3.6	V
$R_T$	Termination Resistance	45	50	55	$\Omega$
	Signaling Rate	0	–	2.25	Gbps

● **Electrical Characteristics**

( $T_a=25^\circ\text{C}$ ,  $V_{CC}=3.3\text{V}$  unless otherwise noted)

Symbol	Parameter	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
$I_{CC}$	Supply Current	$V_{IH} = V_{CC}$ , $V_{IL} = V_{CC}-0.4\text{V}$ , $R_{VSADJ} = 4.64\text{k}\Omega$ $R_T = 50\Omega$ , $AV_{CC} = 3.3\text{V}$ Am/Bm = 1.65 Gbps HDMI data pattern, $m = 2,3,4$ A1,/B1 = 165 MHz clock	–	150	175	mA
TMDS DIFFERENTIAL PINS (A/B;Y/Z)						
$V_{CH}$	Single-end High-level Output Voltage	$AV_{CC} = 3.3\text{V}$ , $R_T = 50\Omega$ , $PRE = 0\text{V}$	$AV_{CC}-10$	–	$AV_{CC}+10$	mV
$V_{CL}$	Single-end Low-level Output Voltage		$AV_{CC}-600$	–	$AV_{CC}-400$	mV
$V_{SWING}$	Single-end Low-level Swing Voltage		400	–	600	mV
$I_{(O)OFF}$	Single-end Standby Output Current	$0\text{V} \leq V_{CC} \leq 1.5\text{V}$ , $AV_{CC} = 3.3\text{V}$ , $R_T = 50\Omega$	-10	–	10	$\mu\text{A}$
$I'_{(OS)}$	Short Circuit Output Current		–	–	12	mA

- Not designed to be resistant to radiation
- The drive current must never exceed the rated power dissipation

● **Block Diagram**

